

Domain

The Domain of a function is the same thing as:

1. Independent Variable
2. X-values
3. Input values

There are two types of domains:

1. Theoretical Domain
2. Practical Domain

Theoretical domain:

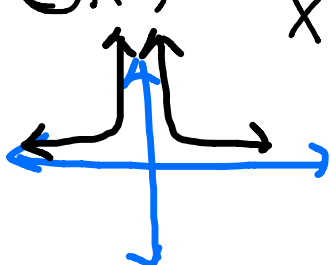
Find ALL possible independent (x-values) that work in the equation. Use a graph to help you to state the domain of the function.

Practical Domain:

Find ALL the independent values (x-values) that makes sense in the WORD PROBLEM only. If the function is from a height vs. time word problem, then you can not have negative times(x-values). Only write the values that would actually work in the real life situation.

Example: State the domain for the following functions:

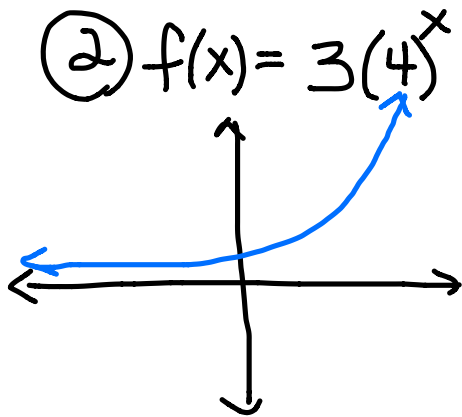
① $f(x) = \frac{100}{x^2}$



Can only find the
theoretical domain
since not a word problem

Domain: $x \neq 0$

$x \neq 0$ means any number but zero will work in the equation



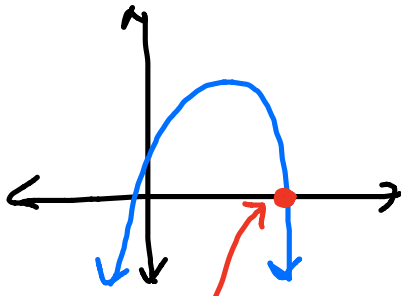
Can only find the theoretical domain
Since it is not a word problem.

Domain: $x = \mathbb{R}$
This means x is equal to all real numbers.

3. In a height as a function of time word problem, where the initial height is 2 ft and the initial upward velocity is 40 ft/sec, the equation would be

$$h(t) = -16t^2 + 40t + 2$$

a. What would be the practical domain?



Since this is a word problem about height and time we must remember time can only be positive. Also we only look at positive height so

when it hits the ground.

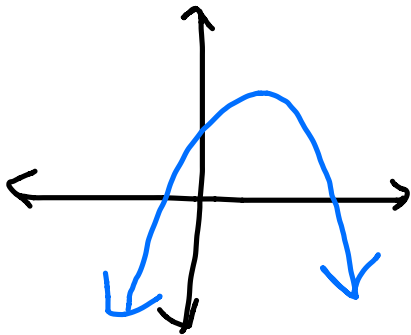
find when it hits the ground.

Domain: From 0 secs to about 2.55 secs

$$0 \leq t \leq 2.55 \text{ (Writing using symbols)}$$

b. What would be the theoretical domain?

For theoretical domain — forget about the word problem. Use the graph to identify all possible x-values



Domain: $x = \mathbb{R}$

